

**INSTRUCTION:**

This section consists of **FOUR (4)** structured questions. Answer **ALL** questions.

**ARAHAN:**

*Bahagian ini mengandungi EMPAT (4) soalan struktur. Jawab SEMUA soalan.*

**QUESTION 1****SOALAN 1**CLO1  
C2

- (a) Identify **THREE (3)** types of error in textile testing. Explain which is the easiest to happen - place, individual and equipment.

*Kenalpasti TIGA (3) jenis kesilapan dalam pengujian tekstil. Terangkan yang mana paling mudah berlaku - tempat, individu dan peralatan.*

[8 marks]

[8 markah]

CLO1  
C3

- (b) Illustrate in graph why textile sample should execute a conditioning process before testing can be done? Relate the graph with textile properties to explain how the process occur.

*Ilustrasikan dalam bentuk graf mengapa sampel tekstil perlu melaksanakan proses "conditioning" sebelum pengujian dilakukan? Kaitkan graf dengan sifat bahan tekstil untuk menerangkan bagaimana proses tersebut berlaku.*

[12 marks]

[12 markah]

CLO1  
C4

- (c) Detect which set of data is more accurate and precise by plotting it into a graph for each data as shown in Table 1.

*Kesan set data mana yang lebih tepat dan jitu dengan memplotkan ke dalam graf seperti Jadual 1.*

[5 marks]

Table 1 / Jadual 1

| Test 1<br>Fabric strength (lb) | Test 2<br>Fabric strength (lb) |
|--------------------------------|--------------------------------|
| 42                             | 57                             |
| 39                             | 41                             |
| 40                             | 42                             |
| 37                             | 36                             |
| 41                             | 42                             |

**QUESTION 2****SOALAN 2**CLO1  
C1

- (a) State a suitable sampling technique used for raw cotton complete with sampling technique diagram.

*Nyatakan teknik persampelan yang sesuai untuk serat kapas berserta diagram teknik persampelan.*

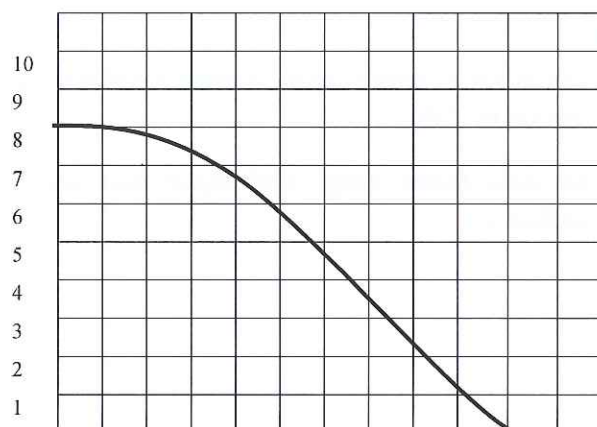
[5 marks]

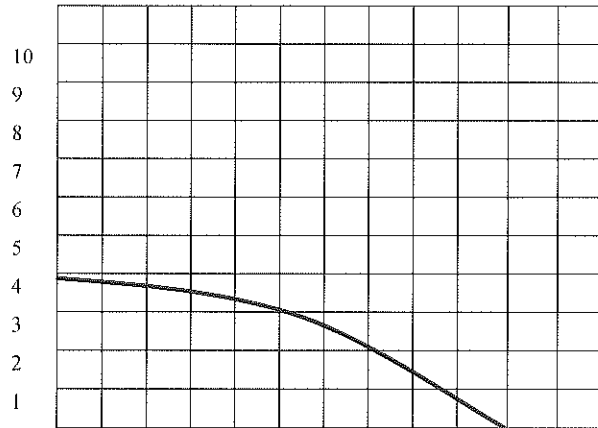
[5 markah]

CLO1  
C3

- (b) Construct the comb sorter diagram A and comb sorter diagram B (Figure 1) to identify the percentage of short fibers. Calculate the percentage of short fibers to determine which diagram has the best commercial value.

*Bina diagram comb sorter A dan diagram comb sorter B (Rajah 1) untuk mengenalpasti peratus serat pendek. Kira peratus serat pendek untuk menentukan diagram manakah mempunyai nilai komersial terbaik.*

**COMB SORTER DIAGRAM A**



COMB SORTER DIAGRAM B

Figure 1 / Rajah 1

[9 marks]

[9 markah]

CLO1  
C4

- (c) Calculate the value for moisture regain and moisture content, if the wet sample weight is 4.00 gram and oven dry sample weight is 3.85 gram.

*Kira nilai moisture regain dan moisture content sekiranya berat kelembapan dalam sampel ialah 4.00 gram dan berat sampel oven ialah 3.85 gram.*

[6 marks]

[6 markah]

CLO1  
C5

- (d) Evaluate the characteristic of fibre in the blank area of the report on the observation of burning test as shown in Table 2.

*Nilaikan ciri-ciri serat dibahagian ruangan kosong pada laporan pemerhatian pengujian pembakaran seperti pada Jadual 2.*

| Result near flame<br><i>Keputusan berdekatan nyalaan</i>   | Type of burning in flame<br><i>Jenis pembakaran dalam nyalaan</i>  | Result when removed from flame<br><i>Keputusan apabila keluar dari nyalaan</i>  | Odor<br><i>Bau</i>                                      | Residue<br><i>Sisa</i>  | Name of fiber<br><i>Nama serat</i>   |
|--|--|---|---|---|--|
| <ul style="list-style-type: none"> <li>Does not shrivel away from flame.<br/><i>Tidak berkerot dari</i></li> </ul> | <ul style="list-style-type: none"> <li>Burns readily in flame.<br/><i>Mudah terbakar dalam nyalaan.</i></li> </ul> | <ul style="list-style-type: none"> <li>Continues to burn.<br/><i>Terbakar berterusan.</i></li> <li>Has an "after-glow" when removed from</li> </ul> | <ul style="list-style-type: none"> <li>_____</li> </ul> | <ul style="list-style-type: none"> <li>_____</li> <li>_____</li> <li>_____</li> </ul> | Cellulose fiber, e.g. cotton, flax and ramie.<br><i>Serat selulosa, cth. Kapas, flak dan rami.</i> |

|  |  |   |   |   |   |
|--|--|---|---|---|---|
| <p><i>nyalaan.</i></p> <ul style="list-style-type: none"> <li>• Ignites immediately with contact to flame. <i>Menyala dengan pantas apabila bersentuhan dengan nyalaan.</i></li> </ul> |  | <p>flame until fibre expended. <i>Mempunyai cahaya apabila dikeluarkan dari nyalaan sehingga keseluruhan serat.</i></p> |   |   |   |
| <ul style="list-style-type: none"> <li>• Shrivels away from flame. <i>Berkerot keluar dari nyalaan.</i></li> </ul>   | <ul style="list-style-type: none"> <li>• Burns slowly. <i>Terbakar secara perlahan.</i></li> </ul> | <ul style="list-style-type: none"> <li>• Self-extinguishes. <i>Terpadam sendiri.</i></li> </ul>                         | <ul style="list-style-type: none"> <li>• _____</li> </ul> | <ul style="list-style-type: none"> <li>• Very small. <i>Terlalu kecil.</i></li> <li>• Dark. <i>Gelap.</i></li> <li>• Bead-like mass that breaks apart easily. <i>Seperti manik besar pecah dengan mudah.</i></li> </ul> | <ul style="list-style-type: none"> <li>• Protein, e.g. silk and wool <i>Protein, cth. Sutera dan bulu biri-biri.</i></li> </ul> |

Table 2 / Jadual 2

[5 marks]

[5 markah]

**QUESTION 3****SOALAN 3**CLO1  
C2

- (a) i. Define the terminology of yarn twist.  
*Definisikan terminologi pintalan yarn.*

[2 marks]

[2 markah]

CLO1  
C2

- ii. Explain **THREE (3)** importance of the twist in yarn properties.  
*Terangkan TIGA (3) kepentingan pintalan dalam sifat yarn.*

[6 marks]

[6 markah]

CLO1  
C3

- (b) i. Write the measurement procedure for a yarn numbering using wrap reel for yarn in a package form.

*Tuliskan prosedur pengukuran penomboran yarn menggunakan alat penggulung gelendung untuk yarn dalam bentuk pakej.*

[6 marks]

[6 markah]

CLO1  
C3

- ii. Solve the yarn numbering in English Cotton Count ( $N_eC$ ) if the yarn length is 1lea (120 yards) of cotton yarn with 0.65 gram from yarn numbering test.

*Selesaikan penomboran yarn dalam English Cotton Count ( $N_eC$ ) sekiranya panjang yarn ialah 1 lea (120 ela) yarn kapas dengan berat 0.65 gram dari ujian penomboran yarn.*

[6 marks]

[6 markah]

CLO1  
C5

- (c) Figure 2 shows a stress-strain graph for three different types of yarn which is obtained from a tensile strength test. Explain **TWO (2)** comparisons on the mechanical properties between cotton-elastomeric blend yarn with two other yarns.

*Rajah 2 menunjukkan graf tegasan-terikan untuk tiga jenis yarn yang berlainan hasil dari pengujian kekuatan tensil. Terangkan **DUA (2)** perbandingan pada sifat mekanikal diantara yarn campuran kapas-elastomer dengan dua yarn yang lain.*

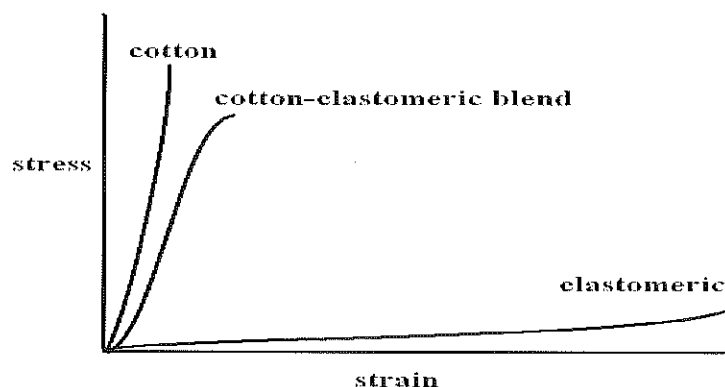


Figure 2 / Rajah 2

[5 marks]

[5 markah]

## QUESTION 4

## SOALAN 4

- CLO1  
C2 (a) i. Identify **TWO (2)** factors that influence abrasion on fabric sample.  
*Kenalpasti DUA (2) faktor yang mempengaruhi pelepasan pada sampel fabric.*  
[2 marks]  
[2 markah]
- CLO1  
C2 ii. Explain **THREE (3)** types of abrasion which is common to fabric.  
*Terangkan TIGA (3) jenis pelepasan yang biasa berlaku pada fabric.*  
[6 marks]  
[6 markah]
- CLO1  
C3 (b) i. Relate to actual situation on the importance of dimensional stability test before woven or knitting fabric is released into market.  
*Kaitkan keadaan sebenar kepentingan pengujian kestabilan dimensi sebelum fabric tenun atau kaitan berada di pasaran.*  
[4 marks]  
[4 markah]
- CLO1  
C3 ii. Illustrate the condition of yarn in woven fabric before and after laundry due to shrinkage. Interpret why it happened.  
*Lakarkan keadaan yarn dalam fabric tenun sebelum dan selepas basuhan akibat pengecutan. Tafsirkan kenapa ia berlaku?*  
[8 marks]  
[8 markah]
- CLO1  
C4 (c) Identify **FIVE (5)** types of agents used to fade or stain in colorfastness test.  
*Kenalpasti LIMA (5) jenis ejen untuk memudarkan atau pemindahan warna dalam pengujian ketahanan warna.*  
[5 marks]  
[5 markah]

SOALAN TAMAT